at least one folding device for folding the flexible display module;

a button module electrically connected to the flexible display module and mounted in one of the plurality of sub-display zones; and

a processing unit electrically connected to the button module for implementing operations of the flexible electronic device.

2. The flexible electronic device as claimed in claim **1**, wherein the flexible display module is an e-paper display.

3. The flexible electronic device as claimed in claim **2**, wherein the at least one folding device is at least one hinge.

4. The flexible electronic device as claimed in claim **3**, wherein the plurality of sub-display zones is two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted in the sub-display zone of the front side of the flexible electronic device, and the sub-display zone without the button module is located on the rear of the flexible electronic device for displaying information.

5. A flexible electronic device that can be operated in an e-reader mode or an audio communication mode comprising:

a substrate;

a flexible display module capable of being opened or folded mounted on the substrate; when the flexible display module is in the opened state, the flexible display module displays a main display area for implementing the e-reader mode; when the flexible display module is in the folded state, the main display area is divided into a plurality of sub-display zones, at least one of which is adapted for implementing the audio communicating mode;

at least one folding device for folding the flexible display module;

a button module electronically connected to the flexible display module and mounted in one of the plurality of sub-display zones for implementing operations in the e-reader mode or in the audio communication mode;

a processing unit electronically connected to the button module; if the flexible display module is in the opened state, the flexible electronic device is switched to the e-reader mode, and if the flexible display module is in the folded state, the flexible electronic device is switched to the audio communication mode; and

an audio device electronically connected to the processing unit.

6. The flexible electronic device as claimed in claim **5**, wherein the plurality of sub-display zones are two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted on the front side of the flexible electronic device for operating the audio communication mode, and the sub-display without the button module is located on the rear side of the flexible electronic device for displaying information.

7. The flexible electronic device as claimed in claim **6**, wherein the flexible electronic device further comprises a cover which is rotatably connected to the substrate; when the flexible electronic device is in the folded state, the sub-display module that has no button module is covered by the cover for protecting the sub-display.

8. The flexible electronic device as claimed in claim **5**, wherein the flexible display module is an e-paper display.

9. The flexible electronic device as claimed in claim **8**, wherein the plurality of sub-display zones are two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted on the front side of the flexible electronic device for operating the audio communication mode, and the sub-display without the button module is located on the rear side of the flexible electronic device for displaying information.

10. The flexible electronic device as claimed in claim **9**, wherein the flexible electronic device further comprises a cover which is rotatably connected to the substrate; when the flexible electronic device is in the folded state, the sub-display module that has no button module is covered by the cover for protecting the sub-display.

11. The flexible electronic device as claimed in claim **8**, wherein the at least one folding device is at least one hinge.

12. The flexible electronic device as claimed in claim **11**, wherein the plurality of sub-display zones are two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted on the front side of the flexible electronic device for operating the audio communication mode, and the sub-display without the button module is located on the rear side of the flexible electronic device for displaying information.

13. The flexible electronic device as claimed in claim **11**, wherein the button module comprises a plurality of physical keys or a plurality of virtual keys.

14. The flexible electronic device as claimed in claims **13**, wherein the plurality of sub-display zones are two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted on the front side of the flexible electronic device for operating the audio communication mode, and the sub-display without the button module is located on the rear side of the flexible electronic device for displaying information.

15. The flexible electronic device as claimed in claim **13**, wherein the flexible electronic device further comprises:

a sensing device mounted on the substrate for detecting whether the flexible electronic device is in the opened state or in the folded state.

16. The flexible electronic device as claimed in claim **15**, wherein the plurality of sub-display zones are two sub-display zones; when the flexible electronic device is in the folded state, the two sub-display zones are separately located on a front side and a rear side of the flexible electronic device, wherein the button module is mounted on the front side of the flexible electronic device for operating the audio communication mode, and the sub-display without the button module is located on the rear side of the flexible electronic device for displaying information.

17. The flexible electronic device as claimed in claim **15**; when the audio communication mode is implemented, the sub-display zones without the button module are used for displaying information.

18. The flexible electronic device as claimed in claim **17**, wherein the plurality of sub-display zones are two sub-dis-